

**The Changing Nature of Spectrum Regulation**  
**And**  
**Its Impact on Broadband Wireless**  
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Good morning, everyone. Thank you for inviting me to speak at this year's conference. I would also like to recognize the folks from my staff that are here at the Show manning our FCC Booth. In particular, I'd like to recognize the efforts of Nancy Plon who was responsible for our presence at this show. We would be delighted if you stopped by our Booth and learn about all of tools and resources we have for your disposal as you build your wireless networks for deploying internet services

For those that are new to this business, the FCC's Wireless Bureau is the spectrum manager for all US commercial and public safety radio spectrum. We handle over 3 million non-federal licenses and each year process over half a million license related transactions. Over the last 10 years, we have also conducted 55 auctions and raised over \$14 billion dollars for the US Treasury. This includes the recently concluded MVDDS auction that raised \$118 million dollars in January.

Thus, as one of the people responsible for making spectrum management decisions, I'm delighted to talk to you about the changes I see in how we are regulate spectrum and their implications for Broadband Wireless.

## **VISION**

One of the first things I did after coming on board to my job as Chief of the Wireless Bureau was to assess the state of the wireless industry, specifically the state of the Broadband Wireless Industry. No doubt, fixed-wireless systems have a long history. Point-to-point microwave connections have long been used for voice and data communications especially for backhaul networks. Yet in reviewing coming advances in Non-Line of Sight Technologies, Software and Micro-processor power, it has become clear that there is a new dawn of possibilities for Broadband Wireless if we can get all the parts to work

together...What is also clear is that what we all did in the past did not work...We had created a patchwork of regulations with no overriding sense to them while using technology that quite wasn't ready for primetime...

Today I feel confident that at least we at the FCC are close to getting the regulatory part of the equation right...We are focusing our efforts on providing our licensees maximum flexibility, encouraging vibrant inter and intra-modal competition and allowing our licensees to experience the opportunity cost of using spectrum so they have the proper market based incentives for innovation and achieving market place success. We have made significant progress in this direction with our various rulemaking activities in the last year including our Secondary Markets Proceeding, the 4.9 GHz order, and our infamous LNP implementation orders.

But before we talk about the change we are making to the to the regulation of spectrum, it is important for us to know where we would like to go...Stephen Covey of the 7 Habits fame says that "one should begin with the end in mind." This is always true regardless of the context but much more so in the context of wireless broadband where the past provides little success or guidance for our future direction.

Let us then spend a minute thinking of the future...Imagine it is 2010. Imagine also that 100 million families and an estimated 150-200 million people subscribe to some form of Wireless Broadband services. Just imagine walking around with a cellphone or PDA or computer that wirelessly connects at 3 Mbs per second wherever you are and without any need to reboot or reauthenticate. In fact, watching TV is basically an exercise in plugging and playing your personal communications device into all kinds of monitors, flat or otherwise, and then downloading specifically designed programs of your choosing. Oh, by the way, the voice service your subscribe to is also part of this package. Your family only

subscribes to a single line residential copper based service just in case the power goes out!!!  
No more cables, no more fiber optics, no more wires at all! What are the other key attributes of this Broadband Wireless future? It must be based on:

- Affordable service
- Highly reliable
- Ubiquitous
- Seamlessness between applications and platforms
- Always-on
- Digital, IP-based
- Interoperable

Most of all, in this vision, there is widespread deployment reaching g 100 million families and 150-200 million individual users...I like this vision and I believe we can all make it a reality. I'm sure your wondering how can the FCC help us get there...?

### **CHANGES AT THE FCC AND SPECTRUM REGULATION**

As most of you know, technology is changing the communications landscape and these same seismic forces are also being felt at the FCC. According to the groundbreaking study released by the interdisciplinary FCC Spectrum Taskforce (which was led by my colleague Paul Kolodzy who is now with the Stephens Institute and also attending this show), the key take away is that new technologies such as cognitive radios, software radios, and just the raw increase of processing power dedicated to digital signal processing is making spectrum a more fungible commodity. Thus, the Taskforce concluded that Access to Spectrum was a greater barrier to the best and most valued use of spectrum than was the

Availability of Spectrum. Under Chairman Michael Powell, we have embarked on a new regulatory paradigm to address the issue of Access to Spectrum. The Taskforce recommended that the best way to remove barriers to accessing spectrum is to permit maximum amount of flexibility for our licensees. “Flexibility” means granting licensees the maximum possible autonomy to determine the highest valued use of their spectrum, subject only to those rules that are necessary to afford reasonable opportunities for access by other spectrum users and to prevent or limit interference among multiple spectrum uses.

Flexibility enables spectrum users to make fundamental choices about how they will use spectrum taking into account market factors such as consumer demand, availability of technology, and competition. By leaving these choices to the spectrum user, this approach tends to lead to efficient and highly-valued spectrum uses. We no longer seek to limit allowable spectrum uses based on our limited regulatory judgments. Flexibility also means the regulatory process being open and neutral to different kinds of business plans that might flourish... It also means allowing licensees the right to freely engage in secondary market transactions so they can get the spectrum to its most valued use without government intervention in the process. The focus is on market solutions instead of government fiat!

Yet flexibility by itself is not enough. It must be accompanied with two other important ingredients which are vibrant competition and opportunity cost of the use of the spectrum. Without competition, providing licensees with flexibility simply results in granting the licensees monopoly over the asset which they might or might not have economic incentive to use effectively. Our rules must be then designed to encourage vibrant competition while allowing maximum flexibility. The other key ingredient is allowing the licensees to understand and internalize the opportunity cost of using spectrum. It is only when licensees realize the true economic value of the spectrum resource will they focus on

innovation and growing markets. Our auctions mechanisms as well as the secondary markets rules we recently put in place are all designed to provide licensees the incentives toward meeting consumer demand for wireless services.

### **WE GOT IT RIGHT ONCE BEFORE!**

Balancing maximum flexibility with vibrant competition and transparency about the value of the spectrum resource is not new to us at the FCC. This balancing act is the hallmark of our greatest success which is the “narrowband” cell phone business. Simply put, we got it right. After a false start of duopoly, Congress, the FCC, and the Wireless Bureau got things right with PCS. We put in place technical rules that have maximum flexibility, we permitted competition to flourish and we enabled licensees to have a transparent understanding of the value of the resources they were being assigned. The result has been a wildly successful industry. In the decade since the PCS rules were first put in place, we have experienced unprecedented growth with subscribers jumping from 10 million to 150 million, competitors increasing from 2 in each market to 7 or more and with prices dropping 80% or more with minutes of use increasing 400 percent.

What’s the moral of the PCS story? Flexible use disciplined with vibrant competition and a realization of the true opportunity cost of the spectrum resource allows for innovation to flourish!

Can we apply these rules to the Broadband Wireless Industry? The answer is YES!

### **WHAT THIS MEANS IN THE NEAR FUTURE**

The greatest opportunity for Broadband Wireless in the near future is the work we are doing on MDS/ITFS band. The 190 MHz of spectrum between 2.5 to 2.69 GHz MDS/ITFS band seems an ideal place for us to apply our changing regulatory model. In the past, the incremental approach to flexibility ended up harming all the parties. The slow

evolution from broadcasting to low power, cellular service has led to the inefficient use of this very valuable band. Clearly, the past was a mess and we hope to make the future much brighter in the rulemaking that is currently underway...So what are we trying to do to fix this band:

- The channels in each group are not contiguous and do not follow any particular relevant economic geography... This lack of symmetry makes it impossible to access this spectrum for new uses as the market dictates.
- In our pending rulemaking for this band, a Coalition of providers have proposed a split of the 2500-2690 MHz band into three segments using non-interleaved blocks, with the middle segment being reserved for high-powered MDS and ITFS stations and the two segments above and below it reserved for low-powered operations. This band plan provides maximum technical flexibility.
- The Coalition suggests that transition to the new band plan would proceed on a market-by-market basis at the instigation of parties ("Proponents") offering to pay the conversion costs of all affected ITFS operators.

Our hope in this proceeding is to sweep away all of the legacy regulation in this band and offer carriers a great deal of flexibility.

However, challenges exist in converting this spectrum to a new, more flexible regime. As we wrestle with the record in the 2.5 GHz proceeding, there are several factors that continue to guide our thinking:

- Is there sufficient competition? We need to make sure that the flexibility we provide is matched with sufficient and sustainable competition in order for innovation to flourish. The current high level of concentration of commercial licensees in this band is disconcerting.
- Is the equipment ready? The lack of suitable equipment at affordable prices seems to be a potential roadblock to the success of this band? Can we get WIMAX and other new technologies in time? The timing needs to be now so the band's licensees can effectively compete with other broadband alternatives
- We need to create incentives for licensees to compete with each other. We also need licensing mechanisms that permit broad national deployment strategies to take place rapidly.

I look forward to applying the new approach to spectrum management in the coming months and years. I also look forward, and I might say eagerly, to your successes as you deploy Broadband Wireless systems and to the great results that are likely in 2010 or dare I hope earlier!

Thank you.